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# SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE •

Field Museum

AUGUST 5, 1933

## Birth of Art

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A SCIENCE SERVICE PUBLICATION

# SCIENCE NEWS LETTER

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The Weekly Summary of Current Science

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# DO YOU KNOW?

Two hundred bees weigh about a pound.

Almost half a million square miles of Arabia remain to be explored by the foreigner.

A British report says that in the past 50 years 58,000 men have been killed in British coal mines.

Birds are remarkably light in weight because their bones are hollow instead of being filled with marrow.

A physician estimates that seven per cent. of the population suffer from the periodic headaches known as migraine.

The falling birthrate in the United States is chiefly a city phenomenon, and the decline is much less in rural areas.

Game commissioners urge the public not to rescue supposedly "lost" fawns, for the mother is generally waiting nearby.

Raw pineapple contains a substance which prevents jellying, and therefore fresh pineapple must be cooked before it can be used in gelatin.

Some of the pygmies of Africa do not know how to kindle fire and depend on borrowing fire when a hearth-fire goes out.

A new and simple magnetic instrument developed by the General Electric Company can be used to measure lightning currents.

The ancient Romans were acquainted with many of the remarkable beasts of Asia and Africa, from seeing them in zoological shows.

Arsenic was used in coloring some of the old fashioned wall papers, but it was found that individuals could be made ill by arsenic particles coming loose in the air or forming gas.

In the days of the Roman Caesars, the Emperor Augustus halted a tendency for buildings to climb skyward by setting a height limit of 68 feet.

Weather men make their thermometer readings in the shade in order to record the temperature of the air: a reading in the sun would record the heat accumulated by the thermometer itself from the sun's heat.

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*These curiosity-arousing questions show at a glance the wide field of scientific activity from which this week's news comes. Book references in italic type are not sources of information of the article, but are references for further reading. Books cited can be supplied by Book Dept., Science News Letter, at publishers' prices, prepaid in the United States.*

ASTRONOMY

# Universe Began Expanding Few Billion Years Ago

## Professor de Sitter, Choosing Between Universes, Sees Room For Million Galaxies in Space Now Occupied by One

A FEW BILLION years ago all the galaxies were together in a space no larger than is now occupied by one of them, but they at once began to separate, so starting the expansion of the universe.

This theory has been presented to the Royal Astronomical Society in London by Prof. Willem de Sitter, the famous Dutch astronomer, whose previous theories of an expanding universe were accepted by a large number of physicists and mathematicians. He has lately changed his views, he said, as to the origin of the expansion.

"We have to choose between three types of expanding universe," Prof. de Sitter declared.

"The first type begins with zero radius at a finite time in the past, and expands to infinity. The second contracts from an infinite radius to a minimum and expands again to an infinite radius, while the third oscillates in a finite time between zero and a maximum radius.

"The third type involves a periodically recurring catastrophe, a theory of which I have a very strong dislike. Until recently I was inclined to believe in the second type.

"Lately I have come to think of the first case, where, according to the mathematical idealization, the universe contracted to a point at some definite epoch of time, the galaxies passing simultaneously through this point with the velocity of light. When the galaxies approach very near each other the mathematical approximation breaks down, so that the point becomes finite, and a physical interpretation is possible.

"The galaxies can easily penetrate each other. If you put a million galaxies in the space now occupied by one, the stars still have plenty of elbow room. Their mutual distances will still be of the order of 100,000 times their diameters.

"The truth of this theory depends on whether the time of passing through the minimum was a very critical epoch or not. It is supported by several indications of a serious crisis three or five billion years ago. The planetary system, according to modern ideas of its origin, is about that age. And a few billion years ago there must have been some very critical event in the history of the galaxies, when they were subjected to very strong perturbations, which were responsible for their rotation, their spiral structure, and the inhomogeneous distribution of matter in them."

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AGRICULTURE

## $5,000,000 Fund To Fight Soil Erosion

SOIL EROSION that removes 126,000,000 pounds of plant food annually from fields and pastures of the United States, at a financial loss estimated at $200,000,000, will be fought with a public works fund grant of $5,000,000.

The soil conservation plan will be under the supervision of the Bureau of Agricultural Engineering of the Department of Agriculture and the Special Board of Public Works in making the grant directed that the program be completed before November 1, 1934.

Terracing is the means to be used in controlling the erosion. The government will supply the technical direction and terracing equipment and the landowners will provide the power and labor.

A maximum amount of unemployment relief is promised for every dollar invested by the government. It is estimated that more than twice the $5,000,000 grant will be spent by landowners in carrying out the work.

Agricultural engineers believe that the one-year program will provide for the terracing of approximately 4,752,000 acres of land and will supply 4,197,600 days of labor.

The Department of Agriculture estimates that 75 per cent. of the cultivated land in the United States is seriously affected by soil erosion. More than 17,000,000 acres of formerly cultivated land have been destroyed by erosion.

Conservation of the fertile top soil, one of the most important of agricultural assets, will tend to maintain the value of the land held as security for long-term loans, made directly or indirectly with government funds. It will decrease the deposits of silt and sand in bottom lands and stream channels.

*Science News Letter, August 5, 1933*

MEDICINE

# 28 Eggs Provide Smallpox Vaccine For 7,000 People

SMALLPOX vaccine virus from chicken eggs instead of from calf lymph is the achievement of Col. W. D. H. Stevenson and Dr. G. G. Butler of the British Government Lymph Establishment. Their method is reported in *The Lancet*. The new method opens the possibility of large scale production of a bacteria-free virus for vaccination, it is claimed. From twenty-eight eggs the investigators obtained enough material to vaccinate seven thousand persons.

Commenting editorially on this new method, *The Lancet* points out that the new vaccine is sterile; that the method is not as arduous or expensive as the production of calf lymph, and that the yield is excellent. The method seems to represent a definite advance and to be free from the objections to which calf lymph is open.

Other investigators have tried to produce a similar vaccine virus. The method reported by Col. Stevenson and Dr. Butler is a modification of the technic developed by A. M. Woodruff and Prof. E. W. Goodpasture of Vanderbilt University, Nashville, Tennessee.

The English investigators started the cultivation of their virus with purely dermal strains from rabbits injected intradermally with glycerinated vaccine lymph derived from the calf.

*Science News Letter, August 5, 1933*

GEOLOGY

# Floating Lands Called Poor Explanation of Ice Ages

THE WEGENER hypothesis of "continental drift," which pictured the earth's great land masses as rafts afloat on a great sea of stiffly plastic sustaining rock, which permitted them to move slowly about, has been very attractive to many geologists; but lately some of them have been showing signs of doubt, and have turned on the theory with challenges that to a man on the sidelines seem hard to answer.

Dr. A. P. Coleman of the Royal Ontario Museum in Toronto, in communications to the *Geographical Journal* and the *Journal of Geology*, goes after Wegener's theory of the origin of ice ages.

The Pleistocene ice age, which was the most recent of such chilly episodes and was still in progress when man appeared on earth, Wegener accounted for by having North America, Britain and Scandinavia all squeeze together in a huddle, while at the same time the North Pole wandered down and sat in the midst of them, so that a single great blanket of ice covered the northern end of the earth. Dr. Coleman calls attention to the well-known fact that in North America at least there were two distinct ice sheets, and the further fact that both the American and the European ice sheets reached the Atlantic Ocean, which they could hardly have done if that ocean had been squeezed out of existence.

Further, Dr. Coleman argues, though a huddle of continents might conceivably account for glaciations, it would not account for the interglacial periods of warm climate which undoubtedly intervened between successive advances of the ice. At least one of these interglacial interludes, he states, brought to north temperate lands a climate averaging four or five degrees warmer than the one now prevailing.

Not only that, but the distribution of glaciation in Europe and America followed the same "unfair" lines as their present distribution of winter cold. Europe's winters are notoriously milder than those of North America in the same latitudes, or even appreciably farther south. Europe's lines of moraines, great hills of ground rock and rubbish dumped by the melting glaciers, are a dozen degrees of latitude farther north than North America's, indicating that even the glacial climate was kinder to the transatlantic continent.

Finally, Dr. Coleman calls attention to the fact that great land masses are not the best arrangements in the world for collecting water, whether as rain or snow freezing into permanent ice. The heart of a continent tends to be a desert. Siberia may have been cold during the Pleistocene but it was not glaciated: the neighboring Arctic ocean was frozen over and was therefore a poor source of evaporation to supply snowstorms.

Allowing the continents to remain approximately where they are at present, however, allows a rich source of moisture for glaciated Europe in the warm and nearby Atlantic ocean, while North America had two oceans and the Gulf of Mexico.

Dr. Coleman takes a few more shots at the Wegenerian argument for the Pleistocene, and then turns his attention to another severe period of glaciation which the world endured shortly after the end of the flush geologic times that we call the Coal Age. Here again he finds difficulties with another bunching of continents, this time on the other side of the globe, with a wandering South Pole settling among them temporarily.

Dr. Coleman's arguments have the disadvantage of setting up again as unsolved riddles some questions which the Wegenerian theory had neatly tied up and put away. But unsolved riddles do not annoy the modern scientist: he is not ashamed to say honestly, "I don't know—yet."

*Science News Letter, August 5, 1933*

SEISMOLOGY

## Aleutian Area Again Shaken by Earthquake

THE earth's crust under the Pacific south of Alaska's Aleutian Islands is particularly uneasy these days. Another world-shaking earthquake originated there Saturday afternoon, July 22, at 3:55.3 p. m., E.S.T., and was recorded on seismographs in various parts of the world. Seismological telegrams to Science Service allowed the U. S. Coast and Geodetic Survey to locate its epicenter at 52 degrees North latitude, 169 degrees West longitude.

On July 19 three earthquakes occurred in the same area within two days.

The bottom of the Pacific Ocean about 200 miles west of Navigator or Samoa Island was the location of an earthquake on Monday, July 24, at 1:55.7 p. m., E.S.T., which was recorded on seismographs in this country and the Pacific area. The approximate epicenter was determined by the U. S. Coast and Geodetic Survey, using data wired to Science Service, to be 13½ degrees South latitude and 176 degrees West longitude.

*Science News Letter, August 5, 1933*

ARCHAEOLOGY

## Turquoise-Covered Skull Represents Mexican God

ONE of the greatest treasures among the famous Monte Alban jewels from the prehistoric shrine in the Mexican State of Oaxaca, now being shown at the Century of Progress Exposition, at first looks rather grisly and out of place among the many beautiful ornaments of gold, pearl, jade and other precious materials. For it consists of a human skull, covered over with a mosaic of tiny flat pieces of turquoise and fitted with eyes of pearl-shell and a nose of flint.

But this ornamented skull was a very important thing in the ancient Mexican religious system, for it represented the great god Tezcatlipoca, who was the deity of the sky, of light and of nature generally. Only one other similar skull has hitherto been found, and this is now in the British Museum, scientists in charge of the treasure state.

Another highly valuable object in the collection is a chalice carved out of rock-crystal. It is so truly round and so smooth that it is believed the work man who made it knew the use of at least a simple type of lathe. Several pairs of large spool-shaped ear pendants also show the same accurate circular cutting attainable only with a lathe.

The use of rock-crystal as a material for ornaments and ceremonial vessels argues for a high degree of both skill and patience by the Indian craftsmen. This mineral is one of the hardest of natural substances, being much harder than ordinary steels.

*Science News Letter, August 5, 1933*

EVOLUTION

# A Million Years of Man

## Men of Prehistory Are Recreated in Field Museum's New "Hall of the Stone Age of the Old World"

**See Front Cover**

A MILLION years of the past history of man, as he climbed upward through the stone age, are recreated in exhibits and life-sized models and dioramas just placed on view by the Field Museum in Chicago.

The exhibits represent the results of years of research, of several museum expeditions, and of intensive collecting of archaeological material. The general plans for the hall were worked out by Henry Field, assistant curator of physical anthropology at the museum, who conducted the several expeditions necessary to study the various sites reproduced and to assemble the comprehensive series of archaeological objects displayed. Dr. Berthold Laufer, curator of anthropology, collaborated with Mr. Field in making and executing the plans.

The life-size figures of the various types of prehistoric men, modeled in attitudes characteristic of tasks in their daily lives, are the work of Frederick Blaschke, well-known sculptor of Cold Spring-on-Hudson, N. Y., who accompanied Mr. Field to Europe and made studies of authentic remains of prehistoric men and of sites where such remains have been found. Backgrounds for the groups are the work of Charles A. Corwin, staff artist of the museum.

The dioramas are arranged in chronological order, each depicting a scene in the life of one of the periods of prehistoric man. Opposite each is a case containing archaeological material of the period represented by the diorama. Additional cases contain material representing still other stages in man's development. Included in these supplementary displays are original stone and bone implements, household objects, sculptures, and other artifacts made by prehistoric men, reproductions of important specimens of prehistoric human remains as well as some original skeletal material, and fossil specimens of the animals of each period.

### Most Ancient Scene

Some of this material dates back as far as a million years ago. The first of the dioramas represents a scene of the Chellean period, approximately 250,000 years ago.

A tour of the hall starts with this Chellean scene, which represents the period identified with the earliest human remains ever found in Europe. The climate at this time was mild, and elephants, rhinoceroses, and hippopotami wandered over Europe. In the museum group there are seen, squatting in the foreground beside a fire, two Chellean hunters, one of whom is chipping flint to make a hand ax for hunting. In the distance is a meandering river on the banks of which are a number of animals. Research has revealed only fragmentary facts about this era, and the museum group presents a dim, moonlit scene symbolizing the darkness of our knowledge.

In a supplementary case are casts of the most famous prehistoric remains discovered—those which scientists have labeled *Sinanthropus* (the Peking man), *Pithecanthropus erectus* (Java ape man), *Eoanthropus* (Piltdown man), and *Homo heidelbergensis* (the Heidelberg man).

The second diorama presents the Mousterian period, about 50,000 years ago. This is the time of Neanderthal man, whose remains have been found in many localities in western Europe. Neanderthal man is the earliest type of which complete skeletons have been found. From the evidence available, he was the first to seize a wife and protect her from animals and other men. This museum group, therefore represents the dawn of family life.

The diorama shows a Neanderthal family on a sandy platform outside the entrance of the Devil's (*Turn Page*)

Field Museum

**IN THE SHELTER OF GIBRALTAR 50,000 YEARS AGO**

***A family of Neanderthals, the earliest people of whom complete skeletons have been found.***

Tower rock shelter at Gibraltar. Silhouetted against the deep blue of the Mediterranean stands a young man with a wooden club in his hand. Squatting beside the glowing embers of the fire is the father of the family, watching mussels open as the heat penetrates their shells. His small son, about five years old, is bringing a twig for the fire. In a large cleft in the rock the mother can be seen carrying her youngest baby.

### Invaders From Asia

The Cro-Magnons, a race from Asia that invaded Europe about 30,000 years ago, appear in the third diorama. These people were very different physically and culturally from their predecessors, and whereas the Neanderthalers finally died out entirely and had no direct link with the modern human race, the Cro-Magnons are believed to have belonged to the direct ancestral line from which large groups of modern people are descended. The culture of the Cro-Magnons has been named Aurignacian because of the discovery of skeletons and flint tools identified with them in the cave of Aurignac near the foothills of the Pyrenees. An abundant game supply at this time made the struggle for food less intense for the Cro-Magnons, and in consequence of possessing more leisure they were responsible for the birth of art. They adorned their cave homes with lifelike carvings and paintings of animals and humans.

The museum group, pictured in part on the front cover, reproduces the cave of Gargas in southwestern France, with a frieze of human hands outlined on the walls. An Aurignacian man is seen resting on his knee with his left hand held against the wall, fingers outspread. In his right hand is a hollow bone tube which he holds against his lips to blow powdered red ochre around the outline of the other hand. On the wall, illuminated by a fire and a sandstone lamp in which animal fat was burned, are many other outlines of hands, as well as drawings of elephants and bison. Personal ornamentation was developed in this period, and in a supplementary case are remarkable original Aurignacian necklaces of beads made from mammoth ivory, shells, teeth and pebbles. These are probably the oldest necklaces ever discovered.

### Resemble Modern Eskimo

The fourth diorama presents a scene of the Solutrean epoch when a race physically resembling the modern Eskimo came into southwestern France and northern Spain. The group reproduces the famous Solutrean frieze in the valley of Le Roc where, on a cliff, early artists left a semicircle of large stone blocks upon which are carved a masked human dancing, horses and other animals, a muskox group charging a fleeing man and other pictures. In the foreground of the museum group is seen a Solutrean sculptor, a Mongoloid type, carving a horse on a block of stone.

In the fifth group the Magdalenian period is taken up. Coming into France, probably from the northeast, and meeting more favorable conditions for obtaining food, these people developed a higher form of culture, and produced the finest naturalistic art of prehistoric times. The museum group reproduces the Cap Blanc rock shelter in the Dordogne region of France where the most striking example of Magdalenian sculpture—a frieze of six horses carved in high relief on the wall—was discovered.

In an adjoining case is exhibited the original Cap Blanc skeleton—the only complete Magdalenian skeleton ever brought to the United States. The remarkable state of preservation of this skeleton of a youth who died some 25,000 years ago makes it one of the most important archaeological treasures in this country. In a case opposite is a reproduction of bison sculptured in clay, which are preserved in the innermost part of the cave of Tuc d'Audoubert in the Ariege district of France. Magdalenian harpoons of bone, a perfect bone needle, limestone slab lamps, and other artifacts are also exhibited.

The mesolithic period, when the transition from the old to the new stone age began, is the subject of the sixth diorama. The domestication of animals, an important advance toward modern civilization, is dramatically illustrated in this group, which shows a wild boar hunt at the entrance to the cave of Mas d'Azil. Dogs are assisting two young Azilian men at close quarters with an enraged wild boar which is defending its mate and young pigs. The hunters use wooden spears with flint lance-points. One holds three dogs in leash with a rawhide strap.

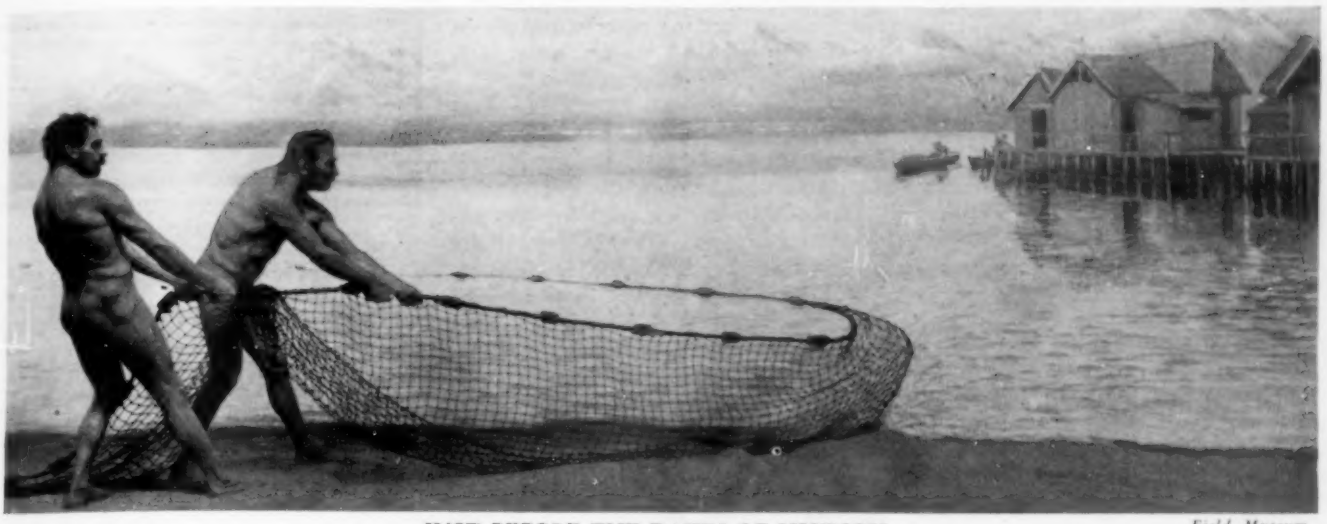
The seventh group is definitely in the neolithic or new stone age. The scene is at Carnac in Brittany where there have been left standing over a stretch of two miles ten avenues of menhirs or large stones marking burials. The place is believed to have been used for worship of the sun, in a religion probably combined in some way with a cult of the dead. The group shows a priest with hands outstretched toward the rising sun, welcoming the birth of a new day.

NEW STONE AGE IN BRITTANY *Field Museum*

***A priest of sun worshippers, neolithic, welcomes the new day at Carnac.***

### Preceding Egypt, Greece and Rome

The eighth group represents a community of Swiss Lake Dwellers, representative of the later neolithic culture which was soon to be followed by the dawn of history with the rise to dominance of such civilizations as those of Egypt, Greece and Rome. The group shows a beautiful early morning scene on Lake Neuchatel. In the foreground



JUST BEFORE THE DAWN OF HISTORY *Field Museum*

***Swiss Lake Dwellers, later neolithic, haul in their seine in the shadow of the Alps.***

DOMESTICATION OF ANIMALS *Field Museum*

***Representing the mesolithic period, when the transition from the old to the new stone age began.***

two fishermen are hauling in their seine. Snowclad Alpine peaks loom in the background. Built out over the water on foundations of log piling is a village with its cluster of thatched wooden houses.

Exhibited nearby is a fine collection of objects from Lake Neuchatel, including implements of bone and stone, pottery, examples of weaving, samples of charred wheat and barley, seeds of various plants, sections of wooden piles, and objects of bronze and iron, indicating the extent of the progress made during this age in the beginnings of modern arts, industries, and construction engineering.

The eight groups have no counterpart in any other museum of the world, and leading anthropologists including such eminent authorities as Sir Arthur Keith and Prof. G. Elliott Smith of England, the Abbé Henri Breuil of France, and others, have pronounced them the finest restorations of prehistoric men ever made. These and other scientists of both the United States and Europe cooperated with Field Museum in the preparation of this hall which presents the most complete, accurate and interesting picture that present knowledge permits of the lives, cultures and physical characters of prehistoric races.



ARCHAEOLOGY

## Hazelnut Butter Kept Unspoiled 2,700 Years

HAZELNUT butter 2,700 years old and still in good condition is the remarkable archaeological find recently examined by Prof. Dr. Johannes Grüss of Berlin-Rahnsdorf, who specializes in the study of food products and beverages used by ancient peoples.

The material, as described by Prof. Grüss, consisted of two lumps about the size of plums, found with the remains of a man of the Iron Age, about 800 B. C., in a grave near the town of Bütlingen. The corpse had been cremated before burial, and the urn containing the hazelnut butter was in the fire. This thoroughly sterilized the earthen vessel and its sealed-in contents, coating the fat with a carbonized layer that constituted a second protective covering. Consequently in all the centuries bacteria and fungi had been unable to penetrate to the fat and spoil it. It was identified as hazelnut fat by particles of carbonized nutshell embedded in it.

Another bit of evidence on what the inhabitants of Germany ate during that remote period Prof. Grüss dug off a burned scrap of pottery found in the ruins of an Iron Age house near Mühlbach. This proved to be a film of scorched milk containing fragments of ground-up grain, evidently the remains of a milk porridge or gruel which some careless housewife of long ago permitted to burn on the fire.

MEDICINE

## Incurable Argyria May Be Detected Early

A BRAND-NEW method for detecting a strange disease, argyria, in its earliest stages was reported to the American Medical Association by Dr. Irving S. Wright of New York Post-Graduate Medical School of Columbia University.

Argyria is a condition in which the patient turns a greyish-blue color. In the final stages the color is very pronounced, and if the patient is exposed to sunlight, his skin turns a very dark mahogany brown. The condition is becoming more common all the time. There is no way of treating it.

Argyria results from taking medicines containing silver salts for a long period of time. Such medicines are often given in the treatment of nose and throat ailments.

Formerly it was thought that the blue discoloration, which makes its first appearance around the base of the nails, was due to stoppage of the blood flow through the tiny blood vessels, the capillaries. Using a specially developed microscope, Dr. Wright and his associates examined the capillaries of the nail cuticle in cases of argyria. They found that there was no stoppage of the blood flow and no evidence of congestion. This led to discovery that continued administration of silver-containing medicines results in the precipitation of silver albuminate in the tissues, which produces the blue color.

Once the color is established, there is no satisfactory remedy for the condition. But if the first appearance of it around the nails is noted and the dosage of silver-containing medicines stopped, it is believed the condition will not go farther. While the condition does not impair the health, it is most disfiguring.

*Science News Letter, August 5, 1933*

ARCHAEOLOGY

## Maya-Like Temple in Aztec Mexico City Upsets Theories

NO RIGHT-THINKING archaeologist observing excavations in the cathedral square of downtown Mexico City would venture to say that a certain ancient Indian building just coming to light there in that spot which was the center of the Aztec capital, is Maya.

Yet the building recalls nothing more than the Maya Temple of Kukulkan in Chichen Itza, or other structures in far-off Yucatan. Only one side of it sticks out of the Aztec earth of Mexico City, but its cornice is like typical Maya ones of Yucatan, and not like Aztec ones. What the little structure itself suggests is contrary to all orthodox theories of Mexican archaeology, and entirely unexpected. The excavators are wondering how this will be explained.

Digging there is hard. The edge of the structure, which appears to be a small stone temple on a stone platform, is flush with the edge of the city pavement six feet above, the building itself apparently continuing under the street on which a trolley runs. The side-wall that has come to light is not buried in ordinary earth, but sealed in a hard mass of a concrete-like mixture which is being slowly chiselled out by hand. The temple is built of a red volcanic rock called tezontli, and is still covered by its various caps of fine white plaster which the concrete shell preserved excellently. On top of this covering mass were stone slabs as of another floor-level. If the concrete is pre-Spanish, as it seems, and the building under it not Aztec, theories would be changed. But no archaeologist is venturing any.

In other parts of the lot, submerged stone steps and walls are found, but it cannot be said whether these are Indian or Spanish until further digging. In one trench well-preserved skulls and femurs were found in addition to the usual decomposed human remains so plentiful there.

*Science News Letter, August 5, 1933*

PHARMACOLOGY

## Prepare Standard Table Of Poison Drugs

A STANDARD table of poisons has been proposed by the National Drug Trade Conference. The table is intended to show which drugs and chemicals should properly bear the poison label when dispensed otherwise than upon a physician's prescription.

The table has been proposed because of the impossibility of framing a definition for poison which will serve as an accurate guide in every case and also because of the unsatisfactory condition of many state poison laws, E. F. Kelly explained in the current issue of the Journal of the American Pharmaceutical Association.

Nearly two hundred substances have been tentatively listed.

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# IN SCIE

PUBLIC HEALTH

## One-Fifth of Children Show Effects of Depression

ONE-FIFTH of all the children in the United States are today showing the effects of the depression. This estimate was made public by the U. S. Children's Bureau. It is based on material accumulated from many sources for more than two years although no widespread survey has been made.

"Poor nutrition, inadequate housing, lack of medical care and in many cases the effect of anxiety and the sense of insecurity that prevails wherever there is no work" are listed by the Children's Bureau as factors that are now showing up in the condition of children throughout the country.

*Science News Letter, August 5, 1933*

ICHTHYOLOGY

## Fish Grow Color Bodies To Match Background

CERTAIN fishes have the ability which the Bible denies to the dusky Ethiopian and the spotted leopard: they can change the color-bodies embedded in their skins to suit changes for lighter or darker in their environment.

It has long been known that many fishes have a chameleon-like ability to change color rapidly, by contracting or expanding these color-bodies; but Dr. Francis B. Sumner of the Scripps Institution of Oceanography has discovered that if their contact with a changed background is prolonged enough they will actually grow new color-bodies in considerable numbers, or get rid of part of those they have.

How deeply this ability is inbred in the very nature of the fishes is demonstrated by the fact that very dark specimens, that have lived in black jars all their lives, will still respond fairly promptly and shed part of their complexions when transferred to white jars; while fishes kept from the day of their hatching in white jars will make the opposite change equally promptly if transferred to black-lined homes.

*Science News Letter, August 5, 1933*

# EE FIELDS

ASTRONOMY

## Wolf's Comet Returns After Seven Years' Absence

WOLF'S periodic comet has just been sighted through Lick Observatory's giant telescope at Mt. Hamilton, Calif., manned by Dr. Hamilton M. Jeffers. It returns to the vicinity of the sun after a journey into space that has lasted seven years.

It is extremely faint and eighteenth magnitude. It is located in the constellation of Sagitta, the arrow, visible now in the eastern evening sky. Its astronomical coordinates are: right ascension 20 hours 7 minutes 57.2 seconds, declination north 22 degrees 4 minutes. The comet is, of course, far too faint to be seen without a powerful telescope.

First discovered in 1884, this comet, known as Wolf I, was last seen in 1925. It is one of the periodic comets whose return was confidently predicted by astronomers.

*Science News Letter, August 5, 1933*

MEDICINE

## Cancerous Blood Injections Show Value of New Test

EVIDENCE of the value of a new test for cancer has just been reported in Berlin by two scientists, Dr. Hans J. Fuchs and Dr. H. Kowarzyk, who dared to try the test on themselves by injecting into their own veins the blood from cancer patients.

Dr. Fuchs observed some years ago that from the blood serum of patients with malignant tumors he could precipitate out a certain fraction which, when exposed in an incubator with the serum of a non-cancerous patient, undergoes a sort of digestion. The extent of the digestion can be determined by analysis of the amount of non-protein nitrogen in the mixture. But when the serum from a cancer patient is exposed to the action of serum from another cancer patient, no such action takes place. This is the basis of the diagnostic test for cancer.

In the latest investigation, Dr. Fuchs and his colleague repeatedly injected serum from a cancer patient into their own veins. After 26 days their blood, which had been normal, gave the reaction of a cancer blood.

What happens in cancer, Dr. Fuchs explained, is that the cancer cells produce a specific antigen which then calls forth the production of a corresponding antibody. The antibody is the agent by which the body fights the antigen of the invading disease, in this case, cancer.

The blood of Dr. Fuchs and his colleague, 26 days after the injection of blood serum from a cancer patient, showed all the characteristics of blood serum superabounding in specific antibodies against malignant tumors, or cancers.

While Dr. Fuchs explains the diagnostic tests on the basis of antigen-antibody reaction, which occurs also in infectious diseases, he does not draw any conclusions from his test concerning the theory that cancer is caused by a germ. Neither does the test decide anything about the cause of cancer.

*Science News Letter, August 5, 1933*

CHEMISTRY

## Complex Chemicals Act Like Bricks in Wall

WHEN COMPLEX organic chemical compounds, like alcohols, paraffins and fatty acids, get together they are not content with merely mixing but they join together in much the same way that bricks are placed in a wall.

This was discovered by Prof. Emil Ott and Dr. D. A. Wilson of the Johns Hopkins University department of chemistry who report results in a communication to *Science*. X-ray examination of "solid solution" mixtures of these long-chain organic compounds show that they behave as if their building blocks had average lengths corresponding to the average of the lengths of the chemical molecule chains, not various lengths as have the individual compounds when not mixed with others.

The accepted idea that such mixtures are only random amorphous mixtures is proved not correct and crystal lattice structure is shown typical for average chain lengths.

X-rays passed through the solid mixture of these materials are bent into a pattern from which the physico-chemists can tell that the string-like molecules seem to line up side by side.

*Science News Letter, August 5, 1933*

GENERAL SCIENCE

## Incomes of Foundations Suffer From Depression

THE PURSUIT of new knowledge in the sciences and creative activities in higher education are in considerable part supported by the surplus wealth of rich men who, having accumulated more than they and their families need, establish philanthropic foundations.

In times when accumulative wealth, or rather those debt liens upon the energy and materials of the future that we are in the habit of calling wealth, undergoes shrinkage or devaluation, the lessened power of foundations to support research, scientific and educational activities is of great concern to the future of the intellectual world.

The United States has furnished the most fertile soil for the growth of foundations. It has been said that two conditions present in this country are necessary in order that foundations may exist in such large numbers. One is the surplus wealth and the other is the social tradition that favors private rather than government initiative in philanthropy.

With the decline of rugged individualism under impact with the "new deal," there may be a change in that social tradition and the government may eventually be expected to sponsor and regulate intellectual philanthropy as it plans to regulate industry and agriculture.

Just how severely the great foundations have suffered in the recent years can not yet be told. Certainly serious curtailments to foundation-supported activities will be inevitable, even if business conditions continue to improve.

In figures, 102 foundations in this country disbursed in excess of $54,000,000, in 1931. The Twentieth Century Fund also lists the total capital of the foundations at $770,000,000. The ten leaders in funds spent during that year are: General Education Board, Rockefeller Foundation, Carnegie Corporation, of New York, Duke Endowment, Julius Rosenwald Fund, Carnegie Foundation for the Advancement of Teaching, Carnegie Institution of Washington, Wyomissing Foundation, Spelman Fund, Children's Fund of Michigan.

*Science News Letter, August 5, 1933*

PALEONTOLOGY

# Best Known Ancient Human Introduced to Geologists

## Discoverers of "Peking Man" Describe Rise of Fossil From Cave Rubbish Heap to Link in Ancestry of Man

THE FAMOUS fossil "Peking man" whose unearthing during the past few years in a cave near Peiping, China, has added an early chapter to human pre-history, was introduced to the International Geological Congress in Washington by the group of scientists responsible for his discovery.

Sinanthropus, as this fossil man is known scientifically, is now recognized to be one of the earliest of humans, rivaling the famous ape-man of Java, Pithecanthropus, in antiquity, and dating from the earliest stage of the Pleistocene, that portion of the record of the rocks that included the great Ice Ages. Although relatively young in the history of the earth, this time is hundreds of thousands of years in the past; just how many, geologists do not as yet attempt to say with accuracy.

Dr. Davidson Black, Canadian by nationality, anatomist by profession, and directing the Chinese Geological Survey's inquiries into the recent geological past of China, acted as spokesman for the group.

More is known about Sinanthropus, China's fossil man, than any other extremely ancient human creatures, Dr. Black said. Skulls and nearly complete jaws of an adult and child have been found, and out of the debris of Choukoutien cave where Sinanthropus must have lived for thousands upon thousands of years, a large quantity of other bones and teeth has been dug.

### 120 Feet Underground

Only in this one locality, a cave uncovered in limestone quarrying near the little village of Choukoutien about 25 miles from Peiping, has evidence of Sinanthropus been found. There in 120 feet of layered dirt of ages are found mingled the bones of Sinanthropus, bones of extinct animals, man-made tools of bones and stone, charcoal from fires that burned and cooked Sinanthropus' meals ages ago.

In scientific language Dr. Black explained how excavations and studies had caused China's fossil man to arise from this cave rubbish heap and become a link in man's common ancestry with the rest of the animals.

Not a great-ever-so-great grandfather, but rather a remote uncle, is Sinanthropus to modern man. Dr. Black and his associates feel sure Sinanthropus was not a direct ancestor of our own particular Homo kind of human being, but that he was nevertheless human in the true sense of the word. He was in a blind evolutionary alley, an off-shoot from the main stem of mankind's evolution that died out sometime later in the course of time.

### Skilfull Despite Antiquity

Despite the remote antiquity of Sinanthropus as measured by the geological layers of the earth, the chert, limestone and quartz implements that he fashioned are relatively advanced and have some characteristics that indicate that he might have been as skilled as the Mousterian men in Europe who were by no means the earliest of the inhabitants of Europe.

Truly international is this search for ancient man in China organized by the National Geological Survey of China. At this International Geological Congress is Dr. Black, honorary director of the Cenozoic Research Laboratory, a special department of the National Geological Survey of China, generously supported by funds of the American Rockefeller Foundation. There is Pere Teilhard de Chardin, Jesuit priest and native of France, late president of the Geological Society of France, whose paleontological researches are world famous. He greeted with affection Sir Arthur Smith Woodward, the British scientist, with whom he was working when he found the canine tooth of the famous Piltdown man. Also representing China at the congress is Dr. V. K. Ting, scholar and gentleman of the world and honorary director of Cenozoic Research in China. He is a leader in Chinese science and an authority on the relationships between fossils and rocks in China.

*Science News Letter, August 5, 1933*

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The spring call of the hylas, very tiny tree frogs in Maine, can be heard nearly a quarter of a mile away.

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A chemist says that lacquers made from wood pulp and cotton waste are taking over $100,000,000 from the paint and varnish industry's business.

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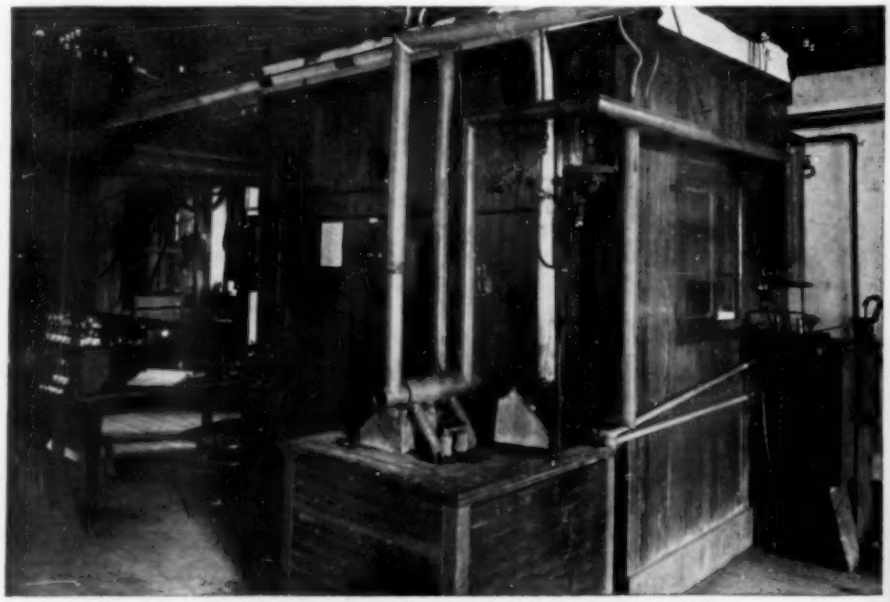
Roman orators so repeated themselves that the short-hand reporter Marcus Tullius Tiro often devised a single sign to stand for a well-known sentence.



CALORIMETER MEASURES ENERGY FROM FOOD

*In a similar apparatus Dr. Atwater made some of the first experiments on human nutrition.*

NUTRITION

# Uses of Food

## "A Classic of Science"

### Although Mankind has been Eating Food a Long Time It is Less Than Forty Years Since We Found Out Why

*METHODS AND RESULTS OF INVESTIGATIONS ON THE CHEMISTRY AND ECONOMY OF FOOD. By W. O. Atwater. U. S. Department of Agriculture, Office of Experiment Stations, Bulletin No. 21. Washington: Government Printing Office,* 1895.

THE TWO chief uses of food of animals are: First, to form the materials of the body and repair its wastes; and, second, to yield energy in the form of (1) heat to keep the body warm and (2) muscular and other power for the work it has to do. In forming the tissues and fluids of the body the food serves for building and repair. In yielding energy it serves as fuel for yielding heat and power.

The different nutrients of food act in different ways in fulfilling these purposes. The principal tissue formers are the albuminoids. These form the framework of the body. They build and repair the nitrogenous materials, as those of muscle, tendon, and bone, and supply the albuminoids of blood, milk, and other fluids. The chief fuel ingredients of the food are the carbohydrates and fats. These are either consumed in the body or are stored as fat to be used as occasion demands.

#### Protein for Building and Repair

The albuminoids are the building material of the body. The bodily machine is made from them, but in the making of the machine the albuminoids remain partly albuminoids and are partly changed to gelatinoids, so that the machine, as built, consists of both albuminoids and gelatinoids. The gelatinoids can not, according to the best evidence now at hand, be transformed into albuminoids, but they do serve to protect the albuminoids from being consumed. Both albuminoids and gelatinoids, after they have served as building material, can be broken up and oxidixed within the body. In this cleavage and oxidation they serve as fuel.

Still another function of the protein is the formation of fats and carbohydrates. These latter are produced by the cleavage of the molecules of the proteid compounds. It is reasonably certain that the albuminoids, and probable, or at any rate possible, that the gelatinoids also, are thus transformed in the animal organism. Similar processes appear to take place in nonliving protein compounds (e.g., cheese) under the influence of ferments.

The nitrogenous extractives can neither build tissue nor serve as fuel, but they are useful otherwise. Just how they are useful is not yet fully explained, but they appear to exert some influence upon the nervous system, to act as stimulants, and thus to help the body to make use of other materials in its nourishment.

The amids do not appear to serve any purpose as building material in the animal body. Like the nitrogenous extractives, they are products of the cleavage of the more highly organized proteins. But while they do not appear to be used for either building or repair, they, or some of them at least, serve as fuel, and it is possible they may, like the gelatinoids, help to protect the albuminoids of the food and of the body tissues from being consumed.

The albuminoids are the most important of the protein compounds, both because they are the only ones that are actually used for building material and because they make up the bulk of the protein of the food and of the body. Gelatinoids and nitrogenous extractives occur only in such animal tissues as muscle, tendon, etc., and their quantity in these is small. The amids are found in considerable quantities in tubers, as potatoes; in roots, as turnips and beets, and in fruits; they are not found to any extent in other food materials. Since the quantities of gelatinoids, nitrogenous extractives, and amids in our food materials are so small, we do not go far astray in following the ordinary practice of using the term protein to denote the building material of the food.

#### Fats and Carbohydrates for Fuel

The machine needs fuel. Starch and sugar are burned in the body and yield heat and power, just as truly as does the coal which is burned in a stove to heat the house or under a boiler to drive an engine. The fats serve the same purpose, only they are more concentrated fuel than the carbohydrates. The body transforms the carbohydrates into fat, which it keeps as a reserve of fuel in the most concentrated form. While the fat of the body is consumed more or less directly, part of it is stored as fat in the body. At the same time the previously stored body fat is being drawn upon for use as fuel. The carbohydrates of the food are consumed more or less directly in the body. Small quantities are transformed into fat, as above stated, and other quantities, probably in most cases still smaller, appear to be transformed into the carbohydrates of the body. The quantity of carbohydrates in the body is at most quite small. The principal one is glycogen. Inosit, which was formerly reckoned with the carbohydrates, is found to have a different constitution, and to contain a benzene nucleus.

The fats and carbohydrates are not the only materials that can be used as fuel. The protein compounds can perform the same service. A dog can live on lean meat, which thus serves as both building material and fuel. We can likewise use the protein of our bodies to supply us with both heat and muscular strength. This last statement may be expressed in another form so as to emphasize an important difference between the protein and the other ingredients of food and between the animal machine and other machines. The protein compounds can do the work of the carbohydrates and fats in being consumed for fuel, but the carbohydrates and fats can not do the work of protein in building and repairing the tissues of the body.

The bodily machine is made of protein. That is to say, blood, muscle,

tendon, bone, and brain all consist of, or at least contain, protein compounds. These are formed from the myosin of meat and fish, the casein of milk, the albumen of eggs, the gluten of wheat, and other albuminoids of the food. As the muscles and other tissues are used up in bodily activity, the same materials of the food are used for their repair. Of course, the mineral matters have a good deal to do with the building up of the tissues. Thus, phosphate of lime is an essential ingredient of the bones.

The chief fuel materials of the bodily machine are carbohydrates and fats, but the protein of the food and the tissues also serves as fuel.

The animal machine differs from others in that it can use its own substance for fuel. . . .

### How Food is Used in the Body

Food supplies the wants of the body in several ways. It either (1) is used to form the tissues and fluids of the body; (2) is used to repair the wastes of tissues; (3) is stored in the body for future consumption; (4) is consumed as fuel, its potential energy being transformed into heat or muscular energy or other forms of energy required by the body; or, (5) in being consumed protects tissues or other food from consumption.

Protein forms tissue (muscle, tendon, etc., and fat) and serves as fuel. Fats form fatty tissue (not muscle, etc.), and serve as fuel. Carbohydrates are transformed into fat and serve as fuel. All yield energy in form of heat and muscular strength.

In being themselves burned to yield energy, the nutrients protect each other from being consumed. The protein and fats of body tissue are used like those of food. An important use of the carbohydrates and fats is to protect protein (muscle, etc.) from consumption.

In this view food may be defined as material which, when taken into the body, serves to either form tissue or yield energy, or both. This definition includes all the ordinary food materials, since they both build tissue and yield energy. It includes sugar and starch, because they yield energy and form fatty tissue. It includes alcohol, because the latter is burned to yield energy, though it does not build tissue. It excludes creatin, creatinin, and other so-called nitrogenous extractives of meat, and likewise thein or caffein of tea and coffee, because they neither build tissue nor yield energy, although they may, at times, be useful aids to nutrition.

*Science News Letter, August 5, 1933*

MEDICINE

# Isolated Faeroe Islands Aid Study of Whooping Cough

THE FAEROE Islands, tiny spots of land far north of Scotland, have helped to prove that vaccination against whooping cough is effective.

These islands, which are under the administrative control of Denmark, offer unique opportunities for epidemiological studies. Whooping cough spreads over the islands in great epidemic waves between each of which there is an interval of years. During an interval, all who have not had whooping cough catch it. Between epidemics there are no isolated, sporadic cases.

The action of whooping cough vaccines has been investigated during two epidemics on the islands by Prof. T. Madsen who is at the head of the State Serum Institute, Copenhagen, where whooping cough vaccines are made. Under his direction 3,926 persons on the islands were vaccinated, either as a preventive measure, or after the whooping cough had declared itself. There were also 1,073 persons who, though susceptible, were for various reasons not vaccinated. Among these persons there were as many as 26 deaths from whooping cough, whereas among the vaccinated persons there were only 6 deaths. In other words, the mortality from whooping cough was about 16 times higher among the controls than among the vaccinated persons.

But this was not all. For, on the whole, the whooping cough ran a much milder and shorter course among the vaccinated than it did among the controls. As the vaccinated and the controls lived under precisely similar conditions, the case for whooping cough vaccination is remarkably strong.

*Science News Letter, August 5, 1933*

**RADIO**

**CHEMISTRY AND RECENT MEDICAL PROGRESS**

**an address by**

**Prof. Julius Stieglitz**

**Chairman of the Department of Chemistry, University of Chicago**

**To be given Friday, August 11, at 1:45 p. m. Eastern Standard Time over stations of the Columbia Broadcasting system. Each week a prominent scientist speaks over the Columbia System under the auspices of Science Service.**

GENERAL SCIENCE

## U. S. International Dues Paid From Private Funds

DUES OF THE United States in the International Council of Scientific Unions and six international unions upon which American science is represented are being paid from private money of the National Research Council because Congress omitted the usual appropriation of about $5,000 when it passed the State Department appropriation bill last session.

Rather than jeopardize friendly scientific relations with the international unions and with other governments, the National Research Council decided as an emergency matter to pay the 1932 quotas of this country from its funds although the present economic situation has increased the financial demands upon this coordinating organization.

*Science News Letter, August 5, 1933*

ARCHAEOLOGY

## Safety Assured For Famous Indian Mounds

PERMANENT safety for the famed mysterious earthworks at Newark, Ohio, has been assured by action converting the land into a state park.

The plan of the earthworks, which in prehistoric times covered 12 miles, is an amazing design of circles, squares, octagons, and long avenues. How or why prehistoric Indians carried out so complex and extensive a project has puzzled visitors to the site from the time when the earliest white men reached the Middle West. It is now be-

lieved that elaborate Indian ceremonies must have taken place at the carefully planned setting.

The modern town of Newark has obscured part of the pattern, but two large portions escaped, and these form the new state park. One portion lies in a fair ground. The other escaped being leveled when historically-minded golfers took it for a golf course, using the Indian ridges, ditches, and mounds just as they are to make a picturesque course.

Telling of long efforts to save Newark's important Indian ruins from being entirely leveled and lost, Dr. H. C. Shetrone, director of the Ohio State Museum, Columbus, said that steps are now being taken toward having the earthworks established as a national monument by the federal government.

"The Newark earthworks," said Dr. Shetrone, "are the largest and best preserved of their class in existence.

*Science News Letter, August 5, 1933*

ARCHAEOLOGY

## Excavations Shed Light On Story of Jewish Exile

THE ANCIENT exile of the Jews, when King Nebuchadnezzar carried them off captive from their Promised Land in Palestine, is seen in a new light as the result of discoveries at a site thought to be the city of Lachish in southern Palestine.

It now appears that the captive Jews, whose unhappy fate in Babylonia is told in Bible narrative, were not the great mass of Jewish people. The number carried off by the conquering Babylonian king was small, if the clues found at Lachish are significant, as archaeologists believe them to be.

The new clue to Jewish history is 700 pieces of pottery, found in a number of tombs. The important discovery was made by chance, when a workman was digging up clay to use as plaster.

The hundreds of pieces of pottery form an unbroken series, showing the kind of clay wares made in Palestine from the ninth century B. C. down through the exile period three hundred years later. The Jewish history told in clay dishes proceeds in orderly fashion with no dramatic breaks in style or technique, such as would be expected if the national life was rudely disrupted by foreign conquerors and deportation of all or most of the people. Hence it is believed that comparatively few captives were taken.

*Science News Letter, August 5, 1933*

PALEONTOLOGY

# Africa, Not Asia, Seen As Birthplace of Humanity

### Evidence Unearthed in Tanganyika Territory Leads to Conclusion of British Authority, Geological Congress Hears

AFRICA was the original center of humanity, the scientific "Garden of Eden," Sir Arthur Smith Woodward, the British authority on ancient man, has concluded.

For some time it has seemed probable that the birthplace of true men, the kind of human beings living today, must have been south-central Asia, but Sir Arthur in a comprehensive paper delivered to the International Geological Congress meeting in Washington has summoned facts that convince him that Africa is the birthplace of humanity.

Most important is the recent skeletal evidence unearthed in Tanganyika Territory, Africa, by Dr. L. S. B. Leakey, that a kind of man lived there very early in Pleistocene or Ice Age that resembled very closely ourselves. This is taken as an indication that the modern type of man appeared much earlier in Africa than in Europe or Asia, although in tool making and presumably in general skill he has not advanced farther than cousin kinds of man, not in the direct line of descent of modern man, which existed at the same time in remote parts of Europe and Asia.

There are four types of mankind, which disappeared before the rise of true men to domination of the earth. One of these is the Piltdown dawn man, Eoanthropus, discovered in England. Another is the famous ape-man of Java, Pithecanthropus. Contemporary with these also is the Heidelberg man, known only by one lower jaw found in Germany, who Sir Arthur doubts really deserves the name Homo. Most recently discovered but of equally great antiquity is Sinanthropus, China's fossil man. All of these are regarded as offshoots from the human stem, sort of unsuccessful experiments of nature as compared with modern man and his ancestors.

Extinct also is the Mousterian or Neanderthal man who was widespread in Europe at a time that is geologically less remote than the opening chapters of Pleistocene time during which the other extinct types lived. The Neanderthals were a second and later offshoot from the human family tree.

So a clearer picture of the human past has been drawn. A million years ago, more or less, at the beginning of the Pleistocene there were five kinds of men existing in different parts of the world. All arose from a common animal ancestor. One was destined to evolve into ourselves. Sir Arthur suggests an intensive search of the earlier layers of the earth in Africa, the Miocene and Pliocene deposits, for earlier evidence of man's rise in the evolutionary scale.

Not all anthropologists and paleontologists studying ancient man agree with Sir Arthur. Many hold fast to the idea that further research in Asia will unearth the ancestors of true man and that the true man found by Dr. Leakey migrated to Africa from Asia.

*Science News Letter, August 5, 1933*

ENGINEERING

# Lack of Research Weakens New Naval Construction

THE ADMINISTRATION is taking steps to give Uncle Sam a Navy second to none. Over $300,000,000 of the federal public works funds will be spent on some 37 new ships, on reconditioning existing ships and for airplanes of the new Navy.

Coincidently with this dual purpose project, a reaction to disarmament failure and to domestic unemployment, serious limitations are being made in the scientific research of the Federal Government. About $10,000,000 is being pared off Congressional appropriations in the name of economy. For instance, the National Bureau of Standards has lost a third of its highly trained personnel.

### Laboratories and the Navy

What have scientists in laboratories to do with the Navy? The scientists are the real men behind the guns, the engines, the armor plate, and the "mechanical brains."

Destroy the search for new methods of building and operating the Navy and it is obsolete and licked before it puts to sea or fires a shot.

It is not too much to say that if the complete creative aid of American science is not utilized by the Navy in its rejuvenation, millions upon millions of dollars will be wasted in lulling Naval officers and the public into a sense of false security.

The latest developments of science must be built into the new Navy. The accumulated knowledge of the U. S. Naval Research Laboratory should be used and that group of buildings at Bellevue, on the bank of the Potomac below Washington, should be humming, busier than any shipyard, turning out new facts that will allow the Navy to build more cheaply and better. Radio, steel, paint and other experts of the Bureau of Standards should be enlisted in research just as though there were a war in progress. The U. S. Coast and Geodetic Survey should have its survey ships operating night and day making and correcting the charts so essential to naval operation. The Bureau of Mines and the Geological Survey can give aid on problems of oil, explosives, mineral resources and other materials for the new Navy.

In fact, when U. S. Navy authorities and designers wanted information on technical points they have turned freely to the scientific bureaus of the government. It should be part of the new Navy program to see that these bureaus are not crippled and thus made ineffective in answering these science calls.

### Products of Research

Imagine an American Navy or a possible enemy navy that can:

Foretell its weather conditions a week in advance.

Send a radio scout plane, with robot pilot, that will reconnoiter an opposing fleet and television the prospective battle scene for the advancing fleet.

Make harder steel for better armor plate.

Make its guns shoot a little farther and a little harder.

Cruise a few hundred miles farther on the same amount of oil.

If the American Navy does not enlist science to bring to it such superior advantages, it must remember that foreign navies are doing so. The American public must be ready to take the consequences.

*Science News Letter, August 5, 1933*



ARCHAEOLOGY

## Mosaic Floor Found in Corinth Building

IN THE RUINS of an enormous building in old Corinth, archaeologists have found a mosaic floor believed to date from the second century A.D., Prof. Richard Stillwell of Princeton University announced. The expanse of mosaic covers 31 by 24 feet, and has in the center a picture of a victorious athlete bearing a palm and facing a woman representing good fortune. The border is adorned with twelve medallions decorated with birds and geometric designs.

Prof. Stillwell, who is director of the American School of Classical Studies at Corinth, has returned here following the season's digging at the ancient city. He plans to continue the Corinthian excavations on an extensive scale during the coming year.

The huge building in which the mosaic floor was found is 541 feet long and 98 feet wide, Prof. Stillwell said. The Romans remodeled it from an earlier Greek market place of the fourth century B.C. The older Greek structure had contained a double row of 66 little shops, with a colonnade along the front.

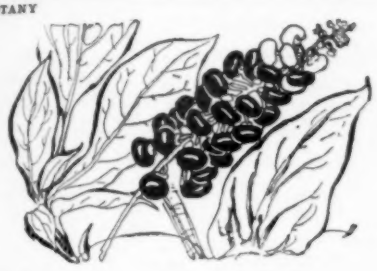
Near the market place, the archaeologists excavated a temple, the existence of which had long been known. Enough fragments of columns and decorative features were found to enable the archaeologists to learn all the architectural detail of the temple.

Digging in the temple of Aesculapius, god of healing, the expedition discovered numerous life-size models of hands, feet, and other parts of human anatomy. These models, made of terra cotta, had been offered to the temple by invalids seeking relief from infirmities.

*Science News Letter, August 5, 1933*

## NATURE RAMBLINGS
*by Frank Thone*

BOTANY



### Pokeberry

ALMOST all of our commonest weeds are foreigners; for it seems axiomatic that an ill weed thrives best away from its own home. But one American plant can claim the somewhat doubtful distinction of sometimes amounting to a troublesome weed on its native heath. This is the pokeberry, or pokeweed, also known simply as poke, and as scoke and garget.

Weed though it is, it is not without redeeming qualities. Prof. Liberty Hyde Bailey, who always has the right word when it comes to botanical description, calls it "a robust plant of heavy odor, but of good habit and clean." Right now, with summer flowers one by one folding up under the unrelenting drought, the pokeweed helps by gaudding the corners with stiff bunches of berries so purple they are almost black.

Those same berries yield quantities of most amazingly purple juice, which children often make into ink for their own amusement and their mother's despair. They might do for a dye, but the color has never yet been fixed.

In earlier days, and to a certain extent still, the thick, asparagus-like shoots of the pokeweed furnished pot herbs. They were a trifle rank in taste unless taken in the very flush of their crisp infancy, but in the lack of asparagus would do all right. They were even cultivated once, but that has passed, too.

The roots of the plant are yellow and intensely bitter, yielding a violent purgative drug. Eaten by accident for horseradish, they have caused serious illness and even death. So that use is gone, too.

Robbed of all its possible occupations, is it any wonder that the pokeberry has become a vagabond and a weed?

*Science News Letter, August 5, 1933*

GENERAL SCIENCE

# "Research Tithes" Would Insure Benefits of Science

IN THE REARRANGEMENTS being made in industry between capital, labor and the public under the National Industrial Recovery Act, there is opportunity for providing regular and ample support of scientific research out of which so many industries today have sprung.

The radio engineers have led the way by suggesting that a small percentage be set aside out of manufacturers' gross sales to provide for research and scientific study in the radio industry. A figure tentatively suggested is five per cent. but this may be too large.

A dollar or two out of every hundred, if planted in research for any industry, could be viewed as insurance for the industry, for the public and for civilization. We do not live in a static world. Progress must be made or retrogression will set in. Research is old-age insurance for industry, the elixir of everlasting youth that fulfills the strong claims made for it.

Where are the wagon makers of yesteryear who did not experiment and manufacture automobiles?

Even if an industry is complacent, content with its processes and product, it is the duty of the public and the government to prevent stagnation and a freezing of the technical progress of the industry. If this argument of safety for progress is not appealing, remember that competitors in other nations will not stay static.

Through the formation of NIRA codes for industry now in progress, a convenient mechanism exists for introducing these "research tithes." Along with minimum wage, hours-of-work, and other provisions, this equitable method of research support should be provided.

To the substantial, ethical manufacturer who desires to see his industry prosper, the research tithe will be a defense against the leech-like manufacturer who lives upon the technical advances of others. It would kill off the gyp manufacturers or force them to contribute to the art that they now benefit from but do not support.

Scientific research at present is a function of government through its departments and universities, of foundations established largely from the profits of industry, and of individual manufacturing concerns. Government by direct expenditures, small though they may be as compared with other costs of government, must continue to plant seed for future generations in pure research investigations that are one or more steps in advance of industrial research. Rich men should continue to implement financially foundations to carry on other pure researches.

*Science News Letter, August 5, 1933*

# •First Glances at New Books

**Sociology**

SCIENTIFIC MANAGEMENT, AN AID TO INDUSTRIAL CONTROL — George Filipetti—*Univ. of Minnesota Press,* 58 p., 50c. With the National Industrial Recovery drive in progress, industry must of necessity give greater consideration than ever before to improved management. Those charged with the operation of industry will undoubtedly be interested in this analysis of some of their management problems by the professor of economics and business administration at the University of Minnesota.

*Science News Letter, August 5, 1933*

**Psychology**

THE NEW PSYCHOLOGIES—Rudolf Allers—*Sheed and Ward,* 81 p., $1. An interesting essay by a reader in psychiatry at the University of Vienna. It is one of the "Essays in Order," whose purpose is to consider possibilities of cooperation or of conflict between the experiments and experiences of the modern world and the traditions and principles of the Catholic order.

*Science News Letter, August 5, 1933*

**Physiology**

THE HUMAN BODY AND ITS FUNCTIONS—C. H. Best and N. B. Taylor—*Holt,* 417 p., student ed. $3, (trade ed., pub. Oct. 1933, $3.75.) With the general interest being taken today in vitamins, calories, hormones and glands, many laymen are eager to learn just what these substances are and what relation they bear to the body and its functions. They will find it easy to gain such knowledge from this book, which has been developed from a course of lectures for public health nurses, hospital instructors and undergraduates in household science, physiotherapy and occupational therapy at the University of Toronto. The simple, readable text is further clarified by numerous illustrations which have been skilfully freed from confusing detail.

*Science News Letter, August 5, 1933*

**Plant Physiology**

THE PNEUMATIC SYSTEM OF PLANTS, ESPECIALLY TREES—D. T. MacDougal and Earl B. Working—*Carnegie Institution of Washington,* 87 p., paper bound 75c., cloth $1.50. This is a companion volume to Dr. MacDougal's earlier publication on the hydrostatic system of trees. Atmospheric gases are found in the intercellular spaces of masses of living tissue as well as in the cavities of a large proportion of the non-living elements of the wood. The researches described were carried out to ascertain the composition of the included gases.

*Science News Letter, August 5, 1933*

**Statistics-Employment**

STATISTICAL PROCEDURE OF PUBLIC EMPLOYMENT OFFICES—Annabel M. Stewart and Bryce M. Stewart—*Russell Sage Foundation,* 327 p., $2.50. Coming as it does just when the federal government is busy organizing a nation-wide employment service under the Wagner-Peyser law, this book is particularly timely. It is a report to a committee of the American Statistical Association of a survey of the statistical procedures of employment offices in foreign countries with recommendations for uniform records to be kept in the public employment agencies in the United States.

*Science News Letter, August 5, 1933*

**Vocational Guidance**

OCCUPATIONS: THE VOCATIONAL GUIDANCE MAGAZINE—Edited by Fred C. Smith—*National Occupational Conference,* $3.50 a year, single copies, 50c. The Vocational Guidance Magazine, official organ of the National Vocational Guidance Association, has been expanded to twice its former size under this new name and now serves also the National Occupational Conference. The same editor continues.

*Science News Letter, August 5, 1933*

**Psychology**

LEARNING IN PRESCHOOL AND ORPHANAGE CHILDREN—Katherine Elliott Roberts—*University of Iowa,* 94 p., pa. $1, cl. $1.50. One of the "Studies in Child Welfare." The orphanage children did better on the mental tests than did the youngsters at the University's nursery school, but one of the groups was selected on the basis of chronological age and the other by mental age.

*Science News Letter, August 5, 1933*

**Mathematics**

DIFFERENTIAL EQUATIONS — Max Morris and Orley E. Brown—*Prentice-Hall,* 409 p., $2.50. A new college text.

*Science News Letter, August 5, 1933*

**Ethnology-Sociology**

RACES AND ETHNIC GROUPS IN AMERICAN LIFE—T. J. Woofter—*McGraw-Hill,* 247 p., $2.50. A discussion of the problems attendant upon the segregation and assimilation of various racial and national groups in heterogeneous America. The author is research professor in the Institute for Research in Social Science of the University of North Carolina, and the book is published as one of the monographs of the President's Research Committee on Social Trends.

*Science News Letter, August 5, 1933*

**Health Education**

THE HEALTH SCHOOL ON WHEELS—J. Mace Andress and I. H. Goldberger—*Ginn,* 399 p., 76c. Health lessons are here attractively presented in the form of a continued story about a health class that journeyed about town in a big yellow bus to learn how the community kept itself and its children healthy. Something really new in this type of text, the book will undoubtedly be popular with teachers and pupils alike. The novel treatment is carried over into the numerous illustrations.

*Science News Letter, August 5, 1933*

**Geology-General Science**

LABORATORY PROBLEMS IN BIOLOGY—George W. Hunter—*American Book Company,* 2 parts, 336 p., 40c each WORKBOOK FOR PROBLEMS IN GENERAL SCIENCE—George W. Hunter and Walter G. Whitman—*American Book Company,* 2 parts, 328 p., 40c each. Each part of these workbooks covers a half-year course. They are designed to be used with the texts of the same names by the same authors.

*Science News Letter, August 5, 1933*

**Physics**

ENERGY AND ITS TRANSFORMATION—Erpi Picture Consultants, 25 p., 35c; ELECTROSTATICS—Erpi Picture Consultants, 24 p., 35c, *Univ. of Chicago Press.* Guides for use with the educational sound pictures now being produced by cooperation between the University of Chicago and Erpi.

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